OLIVER (C. A.)

AN ANALYSIS OF THE OCULAR SYMPTOMS

OBTAINABLE

IN EPILEPSY IN THE MALE ADULT.

Read before the Philadelphia Neurological Society, December 27, 1886.

BY

CHARLES A. OLIVER, M.D.,

Visiting Physician and Ophthalmologist to the State Hospital for the Insane, Norristown, Pennsylvania; Ophthalmic and Aural Surgeon to St. Mary's Hospital, Philadelphia.

[*REPRINTED FROM THE PHILADELPHIA MEDICAL TIMES FOR FEBRUARY* 5, 1887.]

PHILADELPHIA:
J. B. LIPPINCOTT COMPANY.
1887.

Вып 6

AN ANALYSIS OF THE OCULAR SYMPTOMS OBTAINABLE IN EPILEPSY IN THE MALE ADULT.

THE clinical material for these observations was obtained at the State Hospital for the Insane at Norristown, Pennsylvania. The report embraces a study of all of the ophthalmic symptoms that could be gotten from fifty male adult epileptics, without reference to any past etiological factor or present mental condition. This method was pursued for several reasons, most prominent being—

First. A special form of symptomatic disease was taken in preference to any mental condition, because similar mental states may be present in the many and bizarre forms of nerve-lesion, masking and hiding the true significance of the objective symptoms peculiar to any one disease to such an extent as to render differentiation impossible.

Second. A definite variety of disease was chosen, so as to avoid obtaining mere percentages of the ophthalmoscopic signs (which, as a rule, have been limited to an arbitrary designation of the tint of the optic disk and the size of the retinal vessels) of the total number of cases occurring in one asylum,—practically giving, if at all correct, a *résumé* of the different varieties of optic-nerve color and retinal-vessel size of the gross amount of residents of that asylum: an answer which is

liable to alter at any time through change of number of patients and character of mentality, or to be totally diverse from the results obtained by another observer placed in a different situation.

Third. A large percentage of similar cases was taken. This was done so that the different mental states which are seen during the course of any *one* disease might be united into a theoretical average case, which would represent a typical example of the physical and physiological conditions of that disease.

Fourth. Males were used. This is important, for, by exclusion of the female subject, any errors that might arise from additional ocular changes dependent upon diseases which are peculiar to the sex are avoided.

It may be interesting to note that native American stock has been used. There is nothing absolutely important in this selection, because, by reason of many obvious causes, a true American type of man has not as yet been established among us; yet it was intentionally done, so that results obtained from subjects born on American soil could be contrasted and compared with statistics of foreign-born population, in order to see whether the data would exhibit any decided peculiarity in ratios.

OBSERVATIONS AND CONCLUSIONS.

First. Direct vision for form, as a rule, normal in both emmetropia and corrected ametropia.

Second. Accommodative action normal in due proportion to age and refractive error.

Third. Visual fields for form and color reduced to one-third to one-twentieth of normal areas.

Fourth. Visual fields for form and color regularly diminished, without any indentations or scotomata.

Fifth. Order of color-fields follows the regular physiological sequence, without transposition or reversion.

Sixth. Subnormal color-perception to a slight extent, as evidenced by faulty selection of delicate tints and shades containing low percentages of green and red.

Seventh. Pupils, as a rule, equal in size and alike in shape.

Eighth. Irides freely and equally mobile to light-stimulus, accommodation, and convergence.

Ninth. Extra-ocular motion intact in all directions. The presence of insufficiency of the interni in the majority of cases is readily explained by association with existing H + Ah, and probably has no relation to the epileptic condition.

Tenth. Optic disk superficially over-capillary, with a decided grayness in its deeper layers, showing a low grade of incipient optic-nerve degeneration.

Eleventh. Scleral ring rather more sharply cut and broader, especially to the temporal side of the disk, than in the healthy eye ; this being probably due to a slight shrinkage of lowered nerve-tissue.

Twelfth. Fibre-layer of retina increased in thickness, as evidenced by dense and coarse massings of striation extending in all directions from the disk, these being more particularly marked in the superior and inferior portions of the eye-ground, even hiding the edges of the disk itself in many instances.

Thirteenth. Retinal vessels large in size and carrying rather dark-colored blood, this being more pronounced than usual with the veins.

Fourteenth. Retinal veins exceedingly tortuous, and in a few instances pulsating.

Fifteenth. Retinal arteries frequently wavy and sometimes tortuous, especially the temporal and macular twigs.

Sixteenth. Retinal lymph-channels visible in the majority of cases, particularly seen along the larger vascular distributions and at the vessel-entrance as glistening and yellowish-white opacities.

Seventeenth. No other visible changes of any significance throughout the eye-ground except a granular condition of the choroid in the macular region.

In addition, it may be mentioned that, as far as practicable, nearly all of the deep and superficial reflexes were obtained throughout the body. These, as a rule, were above normal, and presented some curious anomalies, which will be reserved for a later publication.

As was to be expected among this class of patients, many of the subjective signs were negative; but, withal, sufficient data

have been produced to warrant proper conclusions in this direction. The results obtained from the study made of the visible ocular changes are of special value, and may be cited as of sufficient imporance to be useful in diagnosis.

Thanks are due to Drs. Charles A. Woodnutt and Henry Sykes, assistant resident-physicians, for good work and carefulness displayed throughout these researches.

DISCUSSION.

Dr. LOUIS J. LAUTENBACH: The subject which has been discussed by Dr. Oliver has been for the past three or four years worked upon by myself, both among male and female subjects, and among those not insane as well as among the insane. The cases have been both from hospital and private practice. Within the past week I have seen three patients with the ordinary epileptic symptoms. One of these had the typical eye-ground which Dr. Oliver mentions. This was a case of idiopathic epilepsy. In another case, supposed to be one of syphilitic epilepsy, the eye-ground was different. In the third case there was still another picture, and in this instance the convulsions were due to the presence of a brain-tumor.

It is an interesting as well as instructive fact that there is a close resemblance between the eye-ground in a case of imbecility and that in a case of epilepsy: so far as I know, there is no essential point in which they differ.

There is one point which Dr. Oliver has not mentioned that I have noted, and that is that in perhaps one-third of the cases examined, and especially in those seen in insane hospitals, the macular region presents a red

granular appearance, and, in addition thereto, the macula itself was of a dull red color. I have not observed the darkness of the color of the blood to which reference has been made.

Gowers states, as the result of the examination of a thousand cases of epilepsy, that there is only one condition that appears to be somewhat frequent in these cases, and that is that the arteries and veins appear to be about equal in size. It is strange that a careful observer like Gowers has not noted the thickening of the fibrous tissue of the retina which has been described by Dr. Oliver, and which is usually the first thing that is observed upon examining the fundus. In examining these cases I was struck with the frequency of high grades of hypermetropia, the proportion being greater than is observed among healthy individuals.

There is another point of some interest, and that is that in long-standing epilepsy, where the attacks have been very frequent or severe, it frequently happens that the nerve presents very marked signs of degeneration, the atrophy being decidedly advanced, the direct form of vision being well preserved.

Dr. FRANCIS X. DERCUM: The use of the ophthalmoscope in epilepsy for diagnostic purposes I regard as of comparatively slight value, for the diagnosis is usually made with ease from the history. The chief value is the light which it throws upon the pathology. Other things being equal, there is a certain correspondence between the condition of nutrition in the retina and the nutrition of the cerebral tissues. There is a certain amount of agreement between the ophthalmoscopic appearances and the microscopic appearances of the brain-tissue. In one case of epilepsy in which Dr. Oliver examined the

eye-ground, the patient subsequently died, and section of the brain showed changes similar to those found in the eye. There was a similar tortuosity of the vessels, a similar infiltration of the sheath of the vessels, and a general increase in the neuroglia.

Dr. CHARLES A. OLIVER: I am not now prepared to give any data in reference to the similarity of the eye-grounds of the imbecile and the epileptic, although I am pursuing investigations among the imbeciles at the Norristown Hospital for the Insane. Also, as I have before noted, I have carefully avoided any endeavor to make any differential diagnosis as to the causation of the convulsions. Inequality of pupil independent of local adhesion can be readily understood when differences of vision and accommodative action dependent upon refractive error, etc., which are so often seen in the two eyes of the same subject, are considered. These were carefully studied and purposely excluded, merely giving the pupillary reactions, sizes, and shapes, *as a rule*, although in a number of instances, especially where there was unequal contraction of the visual fields, I found some curious errors in the innervation arcs of the irides. In reference to the occurrence of high degrees of hypermetropia (varying from four to five dioptrics), I must say that I have not found this to be the case, at least in those subjects that were at my disposal. The fact that the amount of grayness of the disk in some instances seems to bear no absolute relation to the amount of nerve-degeneration —as was curiously shown in a series of observations made some years ago upon young, seemingly healthy males, in which I found that those nerves which were apparently extremely gray had excellent quantitative color-perception, while some of the nerves which

appeared of good healthy tint had not as good (none of these cases making a single mistake in Holmgren's loose-wool selection, and all having perfect acuity for form)—is curious, yet it must be admitted that the amount of vision and color-perception seen with degeneration of nerve-tissue is dependent upon the squeezing or atrophy to which the nerve is subjected. Those of Gowers's observations which were made during or immediately after a convulsive attack were extremely difficult to manage, although limited to cases in which the seizure began locally. His assertion that during the intervals of the fits there are no abnormal ophthalmoscopic appearances can, I think, hardly be borne out. Amongst my conclusions, I have most distinctly pointed out the granular condition of the choroid in the macular region, and lay great stress upon the dirty red-gray degeneration of the optic nerve. In framing the conclusions which I have presented, I have grouped all the symptoms, both subjective and objective, into an average case, hoping thereby to obtain a somewhat typical picture.

The peculiarities of the eye-ground seen in the cases I have studied—those of long-standing attacks of frequent occurrence—are most probably explained by the presumption that every convulsive discharge leaves an additional pathological condition, by which the objective appearances of a low and chronic form of retinitis and perivasculitis, associated with dirty red-gray degeneration of the optic nerve, are at last established as the visible living results of a similar process which has been taking place within the intracranial substance, and which may be readily seen post mortem by careful microscopic examination.

Adjourned.

1507 Locust Street.

Oliver, C.A. An Analysis of the Ocular Symptoms obtainable in Epilepsy in the male adult. 12mo.6.1887.